

**What is claimed is;**

1. A plasma leak monitoring method for monitoring a plasma processing apparatus that executes plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

measurement data constituted of apparatus state parameter data related to a state of said plasma processing apparatus, are obtained through measurement and a plasma leak occurring during the plasma processing is detected by monitoring said measurement data.

2. A plasma leak monitoring method for monitoring a plasma processing apparatus that executes a plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

measurement data constituted of either optical data indicating the intensity of light emitted from the plasma at a predetermined wavelength or electrical data related to a fundamental wave and a higher harmonic wave inherent to the plasma are obtained through measurement and a plasma leak occurring during the plasma processing is detected by monitoring said measurement data.

3. A plasma leak monitoring method for monitoring a plasma processing apparatus that executes a plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

at least two types of measurement data among apparatus state parameter data indicating a state of the plasma processing apparatus, optical data indicating the intensity of light emitted from the plasma at a predetermined wavelength and electrical data related to a

fundamental wave and a higher harmonic wave attributable to the plasma are obtained through measurement and a plasma leak occurring during the plasma processing is detected by a monitoring said measurement data.

4. A plasma leak monitoring method according to claim 1, wherein:  
during the plasma leak detection, a plasma leak is judged to have occurred based upon a fluctuation in said measurement data.

5. A plasma processing apparatus that executes a plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, comprising:  
a means for measurement that obtains measurement data constituted of apparatus state parameter data indicating a state of the plasma processing apparatus through measurement; and  
a means for detection that detects a plasma leak during the plasma processing by monitoring said measurement data.

6. A plasma processing apparatus that executes a plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, comprising:  
a means for measurement that obtains measurement data constituted of either optical data indicating the intensity of light emitted from the plasma at a predetermined wavelength or electrical data related to a fundamental wave or a higher harmonic wave inherent to the plasma through measurement; and  
a means for detection that detects a plasma leak during the plasma processing by monitoring said measurement data.

7. A plasma processing apparatus that executes a plasma

processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, comprising:

a means for measurement that obtains at least two types of measurement data among apparatus state parameter data indicating a state of the plasma processing apparatus, optical data indicating the intensity of light emitted from the plasma at a predetermined wavelength and electrical data related to a fundamental wave and a higher harmonic wave attributable to the plasma through measurement; and

a means for detection that detects a plasma leak during the plasma processing by monitoring said measurement data.

8. A plasma processing apparatus according to claim 5, wherein:

during the plasma leak detection, a plasma leak is judged to have occurred based upon a fluctuation in said measurement data.

9. A plasma processing method for executing plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

during said plasma process, measurement data constituted of apparatus state parameter data indicating a state of the plasma processing apparatus are obtained through measurement and a plasma leak occurring during the plasma processing is detected by monitoring said measurement data.

10. A plasma processing method for executing plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

during said plasma process, measurement data constituted of either optical data indicating the intensity of light emitted from the

plasma at a predetermined wavelength or electrical data related to a fundamental wave and a higher harmonic wave attributable to the plasma are obtained through measurement, and a plasma leak occurring during the plasma processing is detected by monitoring said measurement data.

11. A plasma processing method for executing plasma processing on a workpiece with plasma generated inside an airtight processing apparatus by applying high-frequency power, wherein:

during said plasma process, measurement data constituted of at least two types of data among apparatus state parameter data indicating a state of the plasma processing apparatus, optical data indicating the intensity of light emitted from the plasma at a predetermined wavelength and electrical data related to a fundamental wave and a higher harmonic wave inherent to the plasma are obtained through measurement and a plasma leak occurring during the plasma processing is detected by monitoring said measurement data.

12. A plasma processing method according to claim 9, wherein:

during the plasma leak detection, a plasma leak is judged to have occurred based upon a fluctuation in said measurement data.